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CATALOGUE OF MARINE SPONGES, COLLECTED BY MR. JOS. WILLCOX,  
ON THE WEST COAST OF FLORIDA.

BY HENRY J. CARTER, F. R. S., ETC.

The fragments of the sponges collected by Mr. Willcox which reached me from Philadelphia on June 12, 1884, are all numbered, 1-59, and have been taken from specimens which, bearing the same numbers, have been retained at Philadelphia for identification, when the result of my examination shall have been received; hence the numbers in the catalogue will be found to correspond with those on the specimens at Philadelphia.

It should be remembered that they are all *dry* specimens, and that what I have to examine are *only* "fragments," hence there is very little to be said of each beyond name, form, consistence and color, together with the form and dimension of the spicule respectively, while they are arranged in accordance with the classification that I have proposed in my "Notes Introductory to the Study and Classification of the Spongida," published in the Annals and Magazine of Natural History, for 1875, vol xvi, p. 1, etc.<sup>1</sup>

*Catalogue.*

ORD. II. CERATINA.

FAM. 2. **APLYSINIDA.**

No. 19. *Aplysina cauliformis*, Crtr. ("Annals and Mag. Nat. History," 1882, vol. ix, p. 270).

ORD. III. PSAMMONEMATA.

FAM. 1. **BIBULIDA.**

Group 2. PARASPONGIOSA.

No. 41. *Paraspongia*? — sp. Allied to the officinal sponge, but with more arenaceous (sand-bearing) fibre.

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<sup>1</sup> ABBREVIATIONS.—"Ann." for Annals and Mag. of Nat. Hist.

"Bk." for Bowerbank, monograph of British Spongiada, vol. iii.

"Sdt." for Schmidt.

Measurements of the spicules those of the *largest present*, showing their dimensions across and longitudinally.

FAM. 2. **HIRCINIDA.**Group 3. **HIRCINIOSA.**

No. 23. *Hircinia* ? — sp. Massive, erect, lobate. Surface even, minutely reticulated; projecting arenaceous tags; consistence resilient. Color now brown.

No. 26. *Hircinia* ? — sp. Fragment too insignificant for description.

No. 31. *Hircinia tubulosa*, Crtr. Consisting of a conical mass of erect tubular processes. Consistence resilient. Color light sponge. Fibre scantily cored with arenaceous substance (named after its form).

No. 36. *Hircinia* ? — sp. Sessile, with solid cylindrical erect branches or processes interunited. Consistence resilient. Color now sponge-brown. ? = No. 23. (*Note*.—As the fibre of these *Hirciniæ* was invested with sarcode different from the color of the fibre itself, there is no saying what color the latter was in its natural state.)

No. 52. *Hircinia* ? — sp. Sarcode destroyed by *Spongophaga communis*, Crtr. (See "Parasites of the Spongida," Ann., 1878, vol. ii, p. 168.) Look at the white substance under a microscope, to see the filaments of the parasite.

No. 53. *Hircinia* ? — sp. Branched; branches solid, cylindrical.

No. 54. *Hircinia* ? — sp. Has grown over sedgy leaves.

No. 55. *Hircinia* ? — sp. Sessile, composed of erect conical tubes.

Group 16. **ARENOSA.**

No. 59. *Spongelia*, Sdt., ? *avara*, Sdt.

No. 57. *Spongelia avara*, Sdt. Red sarcode (Sp. Adriat. Meeres, p. 29, taf. 3, fig. 6).

No. 51. *Spongelia*, Sdt. ? — sp. = *Dysidea*, Bk. Fragment much worn.

No. 44. *Spongelia*, Sdt. ? — sp.

No. 43. *Dysidea*, Bk. Like No. 39, but fibrous. ? *Spongelia*, Sdt.

No. 24. *Spongelia*, Sdt., ? *pallescens*, Sdt. (Sp. Adriat. Meeres, p. 28). *Dysidea*, Bk.

No. 39. *Dysidea tenerima*, Crtr. Merely sarcode and sand producing "columnar" structure. No fibre; thus bearing much the same relation to the *Hirciniosa* that the *Holorhaphidota* do

to the Rhabdionemata, viz., a minimum of Kerasine (named after its structure).

#### ORD. IV. RHAPHIDONEMATA.

##### FAM. 1. CHALINIDA.

###### Group 1. DIGITATA.

- No. 13. *Chalina oculata*, Bk. A delicate growth.
- No. 25. *Chalina oculata*, Bk. A form of.
- No. 28. *Chalina oculata*, Bk. Has grown over woody stems.
- No. 29. *Chalina oculata*, Bk. Short-branched delicate growth.
- No. 42. *Chalina oculata*, Bk. Form of.

##### FAM. 2. CAVOCHALINIDA.

###### Group 6. ACULEATA.

No. 22. *Tuba sororia*, Duchass. de Fonb. et Michel. (Spongiarès de la mer Caraïbe, Pl. 8, fig. 2. Harlem, 1864. Also see "Ann." 1882, vol. ix, p. 277, under "Cavochalinida," W. Indian Sponges).

No number. *Tuba sororia* (D. et M., Pl. 8, fig. 2). Covered with empty holes, formerly the abodes of a parasitic polyp.

#### ORD. V. ECHINONEMATA.

##### FAM. 1.

###### Group 4. ECHINOCLATHRATA.

No. 16. *Echinoclathria*? — sp. Dense mass of erect, small, round, short-jointed branches, polychotomously dividing and ending in short processes with rounded terminations; knotty on the surface, chiefly from the presence of a small parasitic polyp. Consistence hard. Color now gray. Texture dense. Spicule of one form only, viz.: acute, short, robust, sub-capitate, the shortest internally and the longest echinating the fibre. Size, about 14 by 1—1800 in. (Like *Clathria coralloides*, Sdt., Sp. Adriat. Meeres, taf. v, figs. 10 and 11.)

No. 27. *Echinoclathria*? — sp. The same as No. 16, but with compressed interuniting branches ending in pointed terminations, but no parasitic polyp. Spicule about 18 by 2—1800 in.

No. 30. *Echinoclathria*? — sp. Fragment too insignificant for general description. Compressed, interuniting branches, ending in pointed divisions. Consistence firm. Color light sponge-yellow. Fibre short-jointed, bearing internally and externally capitate acuates, the latter the longest and projecting in

tufts, mixed with a small echinating, spinous acuate (? *Dictyocylindrus*, Bk.).

No. 37. *Echinoclathria*? — sp. Dense mass of compressed, proliferous, interuniting branches arising from a contracted base, growing on the valve of an *Arca*, terminating in compressed, somewhat expanded divisions. Surface subhispid. Consistence hard, tough. Color now brown. Bearing a parasitic polyp (*Palythoa*). Fibre short-jointed, amber-colored, bearing three forms of spicules, viz.: 1, robust, acuate with globular tuberculated head, about 23 by 2—1800 in. in its greatest dimensions; 2, long smooth acuate, 20 by  $\frac{1}{2}$ —1800 in.; 3, echinating spicule, clavate, spined, small, 6 by  $\frac{1}{2}$ —1800 in. (Note.—If the “tuberculated head” is not an accidental form, it is a markedly distinguishing character.)

No. 38. The same as No. 27.

No. 46. *Echinoclathria*? — sp. Fragment useless for general form. Flimsy branched, interuniting, ridged. Consistence firm. Color now whitish gray. Fibre tough, short-jointed, amber-colored, bearing two forms of spicule, viz.: 1, large, long and short robust acuates, less in diameter at the large end than in the middle of the shaft; 2, echinating, short spinous acuate.

## FAM. 2. AXINELLIDA.

### Group 6. MULTIFORMIA.

No. 6. *Reniera digitata*, Sdt. (Spong. Adriat. Meeres, p. 75, taf. 7, fig. 11.) Massive, sessile lobate. Surface cellular, roughened by ridges and small processes. Consistence firm. Color orange. Structure cellular. (? A species of the genus *Higginsia*, Higgin, “Ann.,” 1877, vol. 19, p. 291; vol. xiv, fig. 1.)

No. 7. *Higginsia coralloides*, Higgin (“Ann.,” l. c.).

No. 15. *Axinellid*,? gen. et sp. Fragment shreddy, branching, tough, brown color. Fibre short-jointed, very tough and amber-colored, hispid, bearing three forms of spicules, viz.: 1, robust, simple, acuate, long and short; 2, fine, long, setaceous, acuate; 3, small, navicular anchorate, flesh-spicule. The acuates are situated partly in and partly projecting from the fibre echinatingly, with the anchorate plentifully scattered about their base of attachment. (? *Clathria* Sdt., Sp. Adriat. Meeres).

No. 35. *Axinella polypoides*, Sdt. (Sp. Adriat. Meeres, p. 3, taf. 6, fig. 4).

No. 45. *Higginsia coralloides*, Higgin (“Ann.,” l. c.). Erect

branches, compressed interuniting, roughened by small projecting processes. Consistence now hard. Color whitish gray, spicules of two forms, viz.: 1, large acerate, smooth, 40 by 2—1800 in.; 2, small acerate, spinous, partly in and partly out of the fibre, projecting echinately from the surface.

#### ORD. VI. HOLORHAPHIDOTA.

##### FAM. 1. RENIERIDA.

###### Group 1. AMORPHOZOA.

No. 5. *Halichondria panicea*, Bk., attached to sea-weed, covered with white *Melobesia*.

No. 12. *Halichondria panicea*, Bk.

No. 34. *Halichondria panicea*, Bk.

No. 58. *Halichondria panicea*, Bk., much worn.

##### FAM. 2. ISODICTYOSA.

No. 17. *Isodictya*, Bk.? — sp. Fragment of a branch. Consistence crumbly. Color white. Spicule acerate, 11 by  $\frac{3}{4}$ —1800 in. (Where the spicule is acerate, which is generally the case, the species are ill-defined, *as yet*.)

###### Group 3. THALYOSA.

No. 48. *Reniera*? — sp. Fragment of a cylindrical, solid branch, in which the fibre is entirely composed of small acerate spicules, about 13—1800 in. long. (These species, for the foregoing reason, are, as yet, ill-defined, except where their general form is peculiar.)

No. 49. The same.

###### Group 6. HALICHONDRINA.

No. 32. *Halichondria incrustans*, Mihi. Variety with “angulated” (Bk.) anchorate and smooth acuate. Consistence crumbly. Color white. Fragment massive, attached to a dark green, dry, gelatinous, now hardened mass, which, if not one of the “*Carnosa*,” is probably the remains of a compound tunicated ascidian.

*Suberites par excellence*. Groups 10, 11 and 12. *Cavernosa*, *Compacta*, *Laxa*.

##### 10. CAVERNOSA.

No. 3. *Suberites*? — sp. Fragment useless for general form, as the whole is broken down into a mass of spicular pulp and fibre. Color yellowish. Spicule of one form only, viz., pin-like; shaft smooth, slightly fusiform and curved; head oval; size, 30 by 1—1800 in. (? = No. 18.)

No. 10. *Raphyrus Griffithsii*, Bk. Branched tubular variety, therefore might be designated "ramotubulata," Crtr. (The first instance of *this form* that I have seen.)

No. 11. The same, but the usual massive, solid form. N. B.—It is *Cliona celata*, which, after having destroyed the oyster-shell in which it generally burrows, grows into the *free* form called by Dr. Bowerbank "*Raphyrus Griffithsii*" (Mon., vol. iii, pl. 64).

No. 18. *Suberites*? — sp. Fragment branched and interuniting most irregularly. Surface covered with short warty and digitiform processes. Consistence light corky. Color ochre-yellow. Structure cellulo-cavernous. Spicule of one form only, viz., pin-like; shaft smooth, slightly fusiform and curved; head oval, often followed towards the shaft, by an annular inflation; size, 30 by 1—1800 in.

No. 33. *Suberites*? — sp. Fragment useless for general form; further than that it is very irregular and interuniting, suberite-like. Consistence firm. Color white. Structure cancello-cavernous. Spicule of one form only, viz., pin-like; shaft smooth, slightly fusiform and curved; head globo-conical; about 65 by 1—1800 in.

No. 1. *Suberites*? — sp. Massive, erect, sessile, terminating in small, conical processes. Consistence now firm. Color gray outside, yellowish inside. Structure cancello-cavernous. Spicule of one form only, viz., pin-like; shaft smooth, slightly fusiform and curved; head nearly oval; point obtusely rounded; size 25 by 1—1800 in. in its greatest dimensions. (If the obtuseness of the point is not accidental, this is a good character.)

#### 11. COMPACTA.

No. 4. *Suberites*? — sp. Taking the form of the Serpula-tubes over which it has grown, interuniting and enclosing shells. Consistence hard now and compact. Surface villous. Color yellowish gray. Spicule of one form only, viz., pin-like; shaft smooth, slightly fusiform and curved; head oval, often prolonged posteriorly; size 50 by 1—1800 in.

No. 8. *Suberites*? — sp. Taking its form from the sedgy leaves over which it has grown. Consistence cheesy, now hard. Color greenish outside (adventitious?), yellowish within. Like *Hymeniacedon carnosa*, Bk., in consistence and structure, if not in the form of the head of the spicule.

No. 40. *Suberites*? — sp. Irregularly branched, interuniting, ending in round-topped processes. Consistence compact. Color reddish yellow. Spicule of one form only, viz., pin-like; head globular with posterior projection, tricuspid like in profile. (? *Suberites marsa*, Sdt., Sp. Adriat. Meeres, p. 67, taf. 7, fig. 2.)

#### 12. LAXA.

No. 20. *Halichondria sanguinea*, Bk. (Mon., vol. iii, pl. 32, fig. 5).

#### FAM. 13. DONATINA.

No. 47. *Tethya lyncurium*, Bk. (pl. 15, fig. 17, op. cit.). Robust form with large cavernous excavations on the surface, and bundles of spicules sunk in the dry, dark, chondroid tissue.

#### FAM. 14. GEODINA.

No. 21. *Geodia tuberculosa*, Bk. (Proc. Zool. Soc., 1872, p. 676, pl. 46).

No. 50. The same. Cylindrical fragment.

#### ORD. VIII. CALCAREA.

No. 9. *Ascaltis Lamarckii*, Hæckel (Die Kalkschwämme, vol. 2, p. 60, Atlas, taf. 9, fig. 5). Massive, growing among sand and round the stems of sea-weed. Enveloping sand. (*Clathrina*, Gray.)

*Numbers absent*, viz., 2, 14 and 56.

#### OBSERVATIONS.

Lest it should be thought that it is only necessary to present a fragment of a sponge to have its name and description pointed out as readily as this might be done with a plant in botany, the former being expected from the accumulated product of a few years, while the latter is one of centuries, I would append the following remarks on the above "Catalogue":—

The family of *Hircinida* requires to be generally reviewed, but the time for this has not arrived, since if not by actual specimens preserved when fresh in a *wet* state, it must be done by a review of all the illustrated descriptions of this kind that have been published; while considering that the specimens of *Hircinida* are exceedingly numerous and *very much* alike, nothing but an opportunity of this kind holds out any hope of their ever being collated, divided and finally arranged in such a manner as would be useful to the student. In the spiculiferous sponges the form of the spicule often facilitates this, but in the *Hircinida* generally,

when divested of the sarcode, which often has a particular color, there is absolutely nothing left but the horny fibre covered with a heterogeneous assemblage of foreign objects, viz., sand, fragmentary sponge-spicules and other microscopic bodies, which vary in amount and kind with those which are most plentiful in the locality where the sponge may be growing, if we except the general form which the skeletons composed of this fibre may retain.

The *Suberites par excellence*, too, like the *Hirciniæ*, require a similar treatment, for here the skeletal spicule, being for the most part simply *pin-like*, is so similar and so slightly varied in form, that, in most instances, this alone would be insufficient for distinction. However, the skeletal spicule is often accompanied by a flesh-spicule of a spini-spirular or other form, which lessens the difficulty; but they can seldom be seen without mounting a microscopic fragment in balsam, when the transparency renders them (if there are any) plain, which the *wet* sarcode previously rendered obscure. This should be done with all the specimens *above mentioned*, as it involves an amount of time which I now have not at my disposal; hence can only recommend the student to consult my initiatory attempt to do this in the "Annals" of 1882 ("West Indian Sponges," etc., vol. 9, p. 349, etc., pl. xii, figs. 25-30).

See also, for the group Donatina and species *Donatia lyncurium*, "General observations" (Ib. ib., p. 358, etc.).

In my division of the Echinonemata, the first groups of the families Ectyonida and Axinellida respectively, viz., "1" and "6" *i. e.* "Pluriformia" and "Multiformia" are merely *provisional* terms for including a vast number of species which hereafter will have to undergo description, illustration and division, when they shall have been usefully collated, etc., after the manner already mentioned, but so much time, taste, labor and opportunity will be required for this, that many years must pass before it even approaches completion.

The number of species of sponges that exist and have still to be discovered has been chiefly foreshadowed to me by the *dry* specimens in the British Museum, upon which my proposed "Classification" has been based, but cannot be put forth with any certainty under such circumstances, more especially the subdivision of the orders.